

Claims

[c1] What is claimed is:

1.An optical disc identification method for identifying the type of an optical disc in an optical disc reproduction system, wherein the optical disc reproduction system comprises a pickup, the pickup comprising a first light source and a second light source, the optical disc identification method comprising:

- (a)measuring a first time needed for the focus of the first light source to move from a plastic layer to a reflection layer of the optical disc;
- (b)measuring the characteristics of a focus error signal while the focus of the first light source is moving in the reflection layer of the optical disc;
- (c)measuring the characteristics of the focus error signal while the focus of the second light source is moving in the reflection layer of the optical disc; and
- (d)identifying the type of the optical disc according to the first time and the results measured in steps (b) and (c).

[c2] 2.The optical disc identification method of claim 1, wherein the first light source is a CD light source and the

second light source is a DVD light source.

- [c3] 3.The optical disc identification method of claim 1, wherein the focus error signal measured in step (b) comprises a first maximum and a first minimum, and the focus error signal measured in step (c) comprises a second maximum and a second minimum.
- [c4] 4.The optical disc identification method of claim 3, wherein the method further comprises computing a first difference by subtracting the first minimum from the first maximum, and computing a second difference by subtracting the second minimum from the second maximum, and in step (d), the method uses the first time, the first difference, and the second difference as judging conditions for identifying the type of the optical disc.
- [c5] 5.The optical disc identification method of claim 4, wherein in step (d), if a first judging value which equals the second difference multiplied by a time threshold then divided by the first time is larger than a second judging value which equals the first difference multiplied by the first time then divided by the time threshold, then the optical disc is identified as a DVD type optical disc, otherwise the optical disc is identified as a CD type optical disc.

- [c6] 6.The optical disc identification method of claim 1, wherein if the optical disc is identified as a DVD type optical disc, the method further comprises:
 - (f)determining whether the optical disc is a dual-layer DVD according to the results measured in step (c).
- [c7] 7.The optical disc identification method of claim 6, wherein step (f) means that aside from a first local maximum and a first local minimum, if the focus error signal measured in step (c) further comprises a second local maximum which is larger than the first local maximum multiplied by a first factor or a second local minimum which is smaller than the first local minimum multiplied by a second factor, then identify the optical disc as a dual-layer DVD.
- [c8] 8.The optical disc identification method of claim 7, wherein the first factor is 1/3.
- [c9] 9.The optical disc identification method of claim 7, wherein the second factor is 1/3.
- [c10] 10.The optical disc identification method of claim 6, wherein if the optical disc is determined as not being a dual-layer DVD, then the method further comprises:
 - (g)measuring the characteristics of a radio frequency signal while the focus of the second light source is mov-

ing in the reflection layer of the optical disc for identifying the optical disc as a single layer DVD-ROM or a DVD+-RW.

- [c11] 11.The optical disc identification method of claim 10, wherein step (g) means that if the radio frequency signal measured while the focus of the second light source is moving in the reflection layer of the optical disc comprises a maximum which is larger than a third threshold, then identifying the optical disc as a single layer DVD-ROM, otherwise identifying the optical disc as a DVD+-RW.
- [c12] 12.The optical disc identification method of claim 1, wherein if the optical disc is identified as a CD type optical disc, then the method further comprises:
 - (h)measuring the characteristics of a radio frequency signal while the focus of the first light source is moving in the reflection layer of the optical disc.
- [c13] 13.The optical disc identification method of claim 12, wherein if the radio frequency signal measured in step (h) comprises a first local maximum which is larger than a fourth threshold, then identifying the optical disc as a CD-ROM.
- [c14] 14.The optical disc identification method of claim 12,

wherein if the radio frequency signal measured in step (h) comprises a first local maximum which is smaller than a fourth threshold and a second local maximum which is larger than the fourth threshold, then identifying the optical disc as a SACD, otherwise identifying the optical disc as a CD-RW.